

WE CLAIM:

1. A clamp comprising:
 - a band having a main body and outwardly facing pockets, the band defining at least two fastener openings at the outwardly facing pockets;
 - a sealing member that mounts between the outwardly facing pockets of the band, the sealing member having fastener openings that align with the fastener openings of the band;
 - reinforcing members that mount in the outwardly facing pockets of the band, the reinforcing members having fastener openings that align with the fastener openings of the band; and
 - bolts that pass through the fastener openings of the band, the fastener openings of the sealing member, and the fastener openings of the reinforcing members, the bolts having a threaded portion and an unthreaded shank, the threaded portion having an outer thread diameter greater than a diameter of the unthreaded shank.
2. The clamp of claim 1, wherein the outer thread diameter of the threaded portion is at least 0.02 inch larger than the diameter of the unthreaded shank.
3. The clamp of claim 2, wherein the outer thread diameter of the threaded portion is at least 0.03 inch larger than the diameter of the unthreaded shank.
4. The clamp of claim 1, wherein the outer thread diameter of the threaded portion is at least 5 percent larger than the diameter of the unthreaded shank.
5. The clamp of claim 1, wherein the sealing member includes concave surfaces that accept a portion of the band.
6. The clamp of claim 5, wherein the reinforcing members include convex surfaces that correspond to the concave surfaces of the sealing member.

7. The clamp of claim 1, wherein the band is doubled over the reinforcing members.
8. The clamp of claim 1, wherein the outer thread diameter of the bolts is larger than a diameter of the fastener openings of the sealing member.
9. The clamp of claim 8, wherein the unthreaded shanks are sized to provide a loose slip fit within the fastener openings of the sealing member.
10. The clamp of claim 8, wherein the outer thread diameter of the bolts is at least .004 inch larger than the diameter of the fastener openings of the sealing member.
11. The clamp of claim 8, wherein the outer thread diameter of the bolts is in the range of .004 to .007 inches larger than the diameter of the fastener openings of the sealing member.
12. The clamp of claim 8, wherein the fastener openings of the sealing member are tapered, and the diameter defined by the fastener openings of the sealing member comprises a minor diameter.
13. The clamp of claim 12, wherein the fastener openings of the sealing member define a cone angle greater than 3 degrees.
14. The clamp of claim 13, wherein the fastener openings of the sealing member define a cone angle greater than 4 degrees.
15. The clamp of claim 14, wherein the fastener openings of the sealing member define a cone angle greater than 6 degrees.

16. The clamp of claim 15, wherein the fastener openings of the sealing member define a cone angle of about 8 degrees.
17. A clamp comprising:
a band having a main body and outwardly facing pockets, the band defining at least two fastener openings at the outwardly facing pockets;
a sealing member that mounts between the outwardly facing pockets of the band, the sealing member having fastener openings that align with the fastener openings of the band, the fastener openings being tapered so as to have a major diameter at a first side of the sealing member and having a minor diameter at a second side of the sealing member, the taper defining a cone angle greater than 3 degrees; and
reinforcing members that mount in the outwardly facing pockets of the band, the reinforcing members having fastener openings that align with the fastener openings of the band.
18. The clamp of claim 17, wherein the cone angle is at least 4 degrees.
19. The clamp of claim 17, wherein the cone angle is at least 6 degrees.
20. The clamp of claim 17, wherein the cone angle is about 8 degrees.
21. The clamp of claim 17, further comprising bolts that pass through the fastener openings of the band, the fastener openings of the sealing member, and the fastener openings of the reinforcing members, the bolts having a threaded portion and an unthreaded shank, the threaded portion having a diameter greater than a diameter of the unthreaded shank and greater than the minor diameter of the fastener openings of the sealing member, the diameter of the threaded shank being less than the minor diameter of the fastener openings of the sealing member.

22. The clamp of claim 17, wherein the sealing member includes concave surfaces that accept a portion of the band.

23. The clamp of claim 22, wherein the reinforcing members include convex surfaces that correspond to the concave surfaces of the sealing member.

24. The clamp of claim 17, further comprising bolts that pass through the fastener openings of the band, the fastener openings of the sealing member, and the fastener openings of the reinforcing members, the bolts having a threaded portion having a diameter greater than the minor diameter of the fastener openings of the sealing member.

25. A clamp comprising:

a band having a main body and outwardly facing pockets, the band defining at least two fastener openings at the outwardly facing pockets;

a sealing member that mounts between the outwardly facing pockets of the band, the sealing member having fastener openings that align with the fastener openings of the band;

reinforcing members that mount in the outwardly facing pockets of the band, the reinforcing members having fastener openings that align with the fastener openings of the band; and

bolts that pass through the fastener openings of the band, the fastener openings of the sealing member, and the fastener openings of the reinforcing members, the bolts having threads defining an outer thread diameter greater than a diameter defined by the fastener openings of the sealing member, the sealing member including threads cut within the fastener openings of the sealing bar by threading the bolts through the fastener openings.

26. The clamp of claim 25, wherein the bolts have threaded portions and unthreaded shanks.

27. The clamp of claim 25, wherein the sealing member includes concave surfaces that accept a portion of the band.
28. The clamp of claim 27, wherein the reinforcing members include convex surfaces that correspond to the concave surfaces of the sealing member.
29. The clamp of claim 25, wherein the band is doubled over the reinforcing members.
30. The clamp of claim 25, wherein the outer thread diameter of the bolts is in the range of .004-.011 inches larger than the diameter of the fastener openings of the sealing bar.
31. The clamp of claim 25, wherein the outer thread diameter of the bolts is in the range of .004-.007 inches larger than the diameter of the fastener openings of the sealing bar.